

WHAT IS CLAIMED IS:

1. A catheter device comprising at its distal end:
5 a proton generating means; and
 a vascular site flushing means.
2. The catheter device according to Claim 1, wherein said vascular site flushing means comprises:
10 a fluid introduction means; and
 a fluid aspiration means.
3. The catheter device according to Claim 1, wherein said proton generating means is an electrode means.
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4. The catheter device according to Claim 3, wherein said electrode means comprises:
 an anode; and
 a cathode.
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5. The catheter device according to Claim 1, wherein said catheter device comprises at least two distinct elements which are movable relative to each other.
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6. The catheter device according to Claim 4, wherein said catheter device further comprises a means for applying an electric potential between said cathode and said anode.
7. A catheter device comprising at its distal end:
30 a proton generating means comprising an anode and a cathode;
 a fluid introduction means; and
 an aspiration means.

8. The catheter device according to Claim 7, wherein said catheter device comprises at least two distinct elements which are movable relative to each other.

5 9. The catheter device according to Claim 7, wherein said catheter device further comprises a means for applying an electric potential between said cathode and said anode.

10. The catheter device according to Claim 7, wherein said catheter device further comprises a vascular occlusion means.

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11. A method of enhancing fluid flow through a vascular site occupied by a vascular occlusion, said method comprising:

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- (a) generating protons from water in said vascular site in a manner sufficient to provide for a subphysiological pH in said vascular site; and
- (b) maintaining said subphysiological pH in said vascular site for a period of time sufficient for fluid flow to be enhanced through said vascular site; whereby fluid flow is enhanced through said vascular site.

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12. The method according to Claim 11, wherein said method further comprises flushing said vascular site with an aqueous solution.

13. The method according to Claim 12, wherein said aqueous solution is an electrolyte solution.

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14. The method according to Claim 12, wherein said protons are generated by electrolyzing water in said vascular site.

15. The method according to Claim 11, wherein said vascular occlusion comprises calcium.

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16. The method according to Claim 11, wherein said occlusion is a total occlusion.

17. The method according to Claim 11, wherein said occlusion is a partial occlusion.

5 18. The method according to Claim 11, wherein a catheter device according to Claim 1 is used to generate protons in said vascular site.

19. A system for enhancing fluid flow through a vascular site occupied by a vascular occlusion, said system comprising:

10 (a) a catheter device according to Claim 1;
(b) a manifold;
(c) an aqueous fluid reservoir; and
(d) a source of negative pressure.

15 20. The system according to Claim 19, wherein said system further comprises a guidewire.

21. A kit for use in enhancing fluid flow through a vascular site occupied by a vascular occlusion, said kit comprising:

20 a catheter device according to Claim 1.

22. The kit according to Claim 21, wherein said kit further comprises a guidewire.